

Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Currently Amended) A modem, comprising:

~~a carrier group transmitting means configured to be coupled to a transmission channel;~~

~~a carrier group receiving means configured to be coupled to the transmission channel for receiving to receive parameters relating to a plurality of carriers; in the transmission channel;~~

~~a carrier grouping means, configured to be coupled to the carrier group transmitting means and to the carrier group receiving means, for determining means configured to determine a plurality of carrier group parameters and at least one dynamically variable size carrier group for the plurality of carriers in the transmission channel based on the parameters received by the carrier group receiving means carriers based on the parameters, at least one of the plurality of carrier group parameters being a worst case parameter of the plurality of carriers within the at least one dynamically variable size carrier group; and~~

~~a tone decoder configured to be coupled to the transmission channel;~~

~~wherein the plurality of carrier group parameters comprises a carrier group gain parameter and is used to dynamically set up the tone decoder;~~

~~wherein the a carrier group transmitting means transmits configured to transmit at least one message to the transmission channel comprising including the plurality of carrier group parameters and the at least one dynamically variable size carrier group.~~

2. (Currently Amended) The modem of claim 1, wherein at least one of the plurality of carriergroup parameters transmitted by the carriergroup transmitting means comprises:

a carriergroup SNR signal-to-noise ratio (SNR) parameter for the plurality of carriers at least one dynamically variable size carrier group.

3. (Currently Amended) The modem of claim 1, wherein the plurality of carriergroup parameters worst case parameter comprises:

a worst case SNR signal-to-noise ratio (SNR) [[for]] of the at least one dynamically variable size carriergroup carrier group.

4. (Currently Amended) The modem of claim 1, wherein at least one of the plurality of carriergroup carrier group parameters comprises:

a carriergroup bitloading parameter for the at least one dynamically variable size carrier group.

5-6. (Cancelled)

7. (Currently Amended) The modem of claim 1, further comprising:
means for using the at least one message to the transmission channel comprising the plurality of carriergroup parameters and the at least one carrier group to set up a tone encoder in a far-end modem coupled to the transmission channel.

8. (Currently Amended) A method for grouping a plurality of carriers in a DMT communication system, the method comprising the steps of: comprising:

determining at least one dynamically variable sized carrier group for the plurality of carriers used for communication in the DMT communication system;

determining a plurality of carriergroup parameters for the at least one dynamically variable sized carrier group, at least one of the plurality of carriergroup parameters being a worst case parameter of the plurality of carriers within the at least one dynamically variable size carrier group;

using the plurality of carriergroup parameters to dynamically set up a tone decoder, ~~wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter decoder~~; and

sending at least one message using the tone decoder, the at least one message including comprising the plurality of carriergroup parameters.

9. (Currently Amended) The method of claim 8, wherein the step of determining the plurality of carriergroup parameters for the at least one dynamically variable sized carrier group carriergroup comprises:

determining a carriergroup signal-to-noise ratio (SNR) for the at least one dynamically variable sized carrier group.

10. (Currently Amended) The method of claim 9, wherein the carriergroup [[signal-to-noise ratio]] SNR for the at least one carrier group [[is]] comprises:

a worst case [[signal-to-noise ratio]] SNR [[for]] of the plurality of carriers within the at least one dynamically variable sized carrier group.

11. (Currently Amended) The method of claim 8, wherein the step of determining the plurality of carriergroup parameters for the ~~carriergroup~~ at least one dynamically variable sized carrier group comprises:

determining at least one carriergroup bitloading for the ~~at least one carriergroup~~ dynamically variable sized carrier group.

12-13. (Cancelled)

14. (Currently Amended) The method of claim 8, ~~wherein the at least one message comprising the plurality of carriergroup parameters is used to further comprising:~~

[[set]] setting up a tone encoder in a far end modem using the at least one message.

15. (Currently Amended) A method for grouping a plurality of carriers in a DMT communication system, the DMT communication system ~~comprising~~ including a near end and a far end modem, ~~the method~~ comprising:

determining at least one dynamically variable sized ~~carriergroup~~ carrier group from the plurality of carriers used for communication in the DMT communication system;

determining a carriergroup signal-to-noise ratio (SNR) for the at least one ~~carriergroup~~ dynamically variable sized carrier group;

determining a carriergroup bitloading and a carriergroup gain for the at least one ~~carriergroup~~ dynamically variable sized carrier group based on the carriergroup [[signal-to-noise ratio]] SNR;

using the carriergroup bitloading and the carriergroup gain ~~for the at least one carriergroup for to~~ dynamically setting set up a tone ~~decoder~~ encoder in the near end modem; and

using the carriergroup bitloading and the carriergroup gain ~~for the at least one carriergroup for transmitting to transmit~~ messages from the near end modem to the far end modem using the tone encoder.

16. (Currently Amended) The method of claim 15, wherein the carriergroup ~~signal to noise ratio for the at least one carriergroup is SNR comprises:~~

~~a worst case signal to noise ratio SNR [[for]] of the plurality of carriers within the at least one dynamically variable size carrier group.~~

17 - 18. (Cancelled)

19. (Currently Amended) The method of claim 15, wherein the communication system is a VDSL system.

20. (Currently Amended) A modem for grouping a plurality of carriers in a DMT communication system coupled to a far-end modem via a transmission channel, the ~~modem~~ comprising:

~~carriergrouping means for determining configured to determine~~ multiple dynamically variable sized carrier groups for the plurality of carriers and ~~for determining to determine~~ a plurality of carriergroup parameters for each of the multiple carrier groups ~~at least one of the plurality of carriergroup parameters being a worst case parameter of the plurality of carriers within each of the multiple carrier groups; and~~

carriergroup transmitting means ~~for transmitting~~ configured to transmit messages comprising including the plurality of carriergroup parameters to the far-end modem via the transmission channel[[],] to enable the far-end modem to send and receive messages using the multiple carrier groups; ~~and~~ groups, the carriergroup transmitting means including:

~~a tone decoder encoder coupled to the transmission channel wherein the plurality of carriergroup parameters is used to configured to transmit the messages, the tone decoder being dynamically set up based upon the plurality of carriergroup parameters the tone decoder and wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter.~~

21. (Currently Amended) The modem of claim 20, wherein the plurality of carriergroup parameters comprises:

~~a signal to noise ratio signal-to-noise ratio (SNR).~~

22. (Currently Amended) The modem of claim 20, wherein the plurality of carriergroup parameters for each of the multiple carrier groups comprises:

~~a worst case signal-to-noise ratio (SNR) for the specified carrier group each of the multiple carrier groups.~~

23. (Currently Amended) The modem of claim 20, wherein the plurality of carriergroup parameters comprises:

~~a carriergroup bitloading parameter for each of the multiple carrier groups.~~

24 - 25. (Cancelled)

26. (Currently Amended) The modem of claim 20, wherein the messages comprising the plurality of carriergroup parameters are used to set up a tone encoder in the far-end modem coupled to the transmission channel.

27. (Currently Amended) The method of claim 15, wherein the carriergroup bitloading and the carriergroup gain for the at least one carrier group is used to further comprising:

[[set]] setting up a second tone encoder in a far end modem using the carriergroup bitloading and the carriergroup gain.

28. (New) The method of claim 1, wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter.

29. (New) The method of claim 1, further comprising:

setting up a tone encoder using the plurality of carriergroup parameters.

30. (New) The method of claim 8, wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter.

31. (New) The modem of claim 20, wherein the plurality of carriergroup parameters comprises a carriergroup gain parameter